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## SECTION OF GEOLOGY AND MINERALOGY*

MARCH 6, 1944

DOCTOR GEORGE H. CHADWICK, University of Newark, Newark, N. J.: *The Geology of Mount Desert Island (Acadia National Park).*† (Illustrated by lantern slides.)

Two-thirds of the way up the ragged coast of Maine from New Hampshire lies the second largest water-bound land-mass on the eastern shores of the United States—the oft-mispronounced island of *Mount Desert* (de-sert', "isolated or solitary" mountains, derived from "l'Ile des Monts-deserts" of Champlain, the discoverer). Here alone in the East do the mountains meet the sea. And here, reveling in both silent mountain top and thunderous sea-cliff, lies Acadia National Park, our unique sea-coast Federal park.

Of roughly circular outline, but split nearly in two up the middle by Somes Sound, the Island comprises a hundred square miles. The low southwest lobe is entire, but, what should be the companion southeast lobe, east of the entrance to the Sound, is invaded by the sea and broken up into the five Cranberry Islands. Close along the northwest side is the large Bartlett's Island, separated by a steamboat channel. Better known are the five spruce-forested isles, the Porcupines, on the

* The Section of Psychology met March 20, 1944. Dr. Ernst Kris delivered an address entitled, "Art and Regression." An abstract will be published in the May number of the Transactions.

† The talk was illustrated by Kodachrome slides, as well as standard slides, loaned by the Acadia National Park Service. The speaker, in addition to his geological subject, covered various features of the local history, scenery, and wild life of Mount Desert Island.

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Executive Secretary: Eunice Thomas Miner.

Assistant Editor: Ethel J. Timonier.

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northeast, forming a horseshoe around the anchorage at Bar Harbor, from the hills of which they look like five of these bequilled animals swimming a race to the open Atlantic.

The central portion of Mount Desert, across which runs the mountain range (paralleling the slant of the Maine coast) for ten miles, is of warmly-tinted pink to red granite or quartz-syenite, surrounding which are the older, "weak" rocks that the granite intruded from beneath. But, as the granite mass is longer east-west, and the island itself is longer north-south (about 15 miles by 12), these weaker rocks are found chiefly in the north and the south portions. Indeed, the granite reaches the sea at points on the southeast and northwest shores.

The oldest rock exposed is on the west and northwest sides and on Bartlett's Island; thence north to Ellsworth and west to Deer Isle, beyond our limits. This is the crinkly, lustrous *Bartlett's Island schist* (wrongly renamed "Ellsworth" schist), generally of bright green chlorite and clear vitreous quartz, but the mica is sometimes brown or black biotite, rarely gray muscovite. The sharp plications of this rock trend hereabouts mostly north or northeastward. Microscope sections (Alling, Fluhr) reveal that the original lamellated "shale" was in part or wholly volcanic ash, and the quartz interlaminae (only 1 to 2 millimeters thick) were lit-par-lit injections from some acid magma. Sills of presumably the same ancient granite (which I am calling *Uncle Israel's*), very white in color and much crushed (cataclastic), as well as some interbedded true hydroclastic white or gray quartzites, occur on Bartlett's Island and on the main Island, besides "gneisses" that are the schist soaked by this granite. Moreover, on the north shore, from Uncle Israel's Point westward, are extensive masses of clear granite-gneiss ("white") in which, at one point, an unmashed remnant of the original rock is an amphibole-syenite from which the quartz may have been drained away into the lit-par-lit laminae in the schist.

Supposedly, before the igneous bathylithic invasions, this Bartlett's Island schist floored the remaining sedimentary rocks of the Island, though it has no exposures over the eastern half. These remaining strata (given four different names by Shaler, 1889) form a seemingly indivisible succession that the elder Crosby (1881) long ago called the *Frenchman's Bay series*. But they exhibit two contrasting and interfingering facies. Developed more largely on the north and northeast is the *Bar Harbor* detrital facies of thin-bedded (so-called "flaggy") or sometimes almost shaly-looking sub-metamorphosed

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quartzose silts, dully polychrome in cliffs but light bluish gray where wave-scrubbed. Developed more largely at the south is the *Cranberry Island* volcanic facies, of felsite (and porphyry) flows and ashbeds, with some tuffs and some amygdaloids. Yet interbedded with these are recurring layers of normal Bar Harbor detritals at widespread localities; and, correspondingly, the volcanics occur as interbeddings clear to the north shore—lavas at Star Point, thin ashbeds on the shore path at Bar Harbor (on Reef Point), and thick ones, conspicuously, out on Burnt Porcupine, besides many other places. The ancient land lay northward, the volcanic vents southward. Perhaps at Anemone Cave, on the southeast shore, we have the melange of one of the vents, much cut by later diorite and granite.

At Emery's Cove, on the north, this sedimentary series, lying at low easterly dips and barely metamorphic, comes almost into contact with the highly crinkled, highly metamorphosed Bartlett's Island schists dipping steeply westerly, away from it. Diametrically opposite, at Murphy's Hill, horizontal lava-flows lie directly on vertically uptilted eroded edges of the black schist. Thus, at both points of contact, we have record in unconformity of a profound intervening orogeny.

Low dips, gently rolling, but with small overthrustings, characterize these Frenchmen's Bay strata at north and at southwest; but southeastward, beginning even at the south edge of Bar Harbor village and reaching a climax on the Cranberry Islands, the dips soon approach the vertical and presently become overturned. This is *Acadian folding*. It is evident that such folding bespeaks a now vanished overburden of other deposits. Like witness is borne by the igneous intrusions now to be described.

First of these is the *Ireson felsite*. The pinkish-weathered Ireson *dikes* are mostly thin and not very numerous, but at least two of them may be seen at Reef Point, Bar Harbor. They represent continuing irruption of the same magma from which came the felsite flows and ashes, and, in part, they are therefore contemporary with those, but more largely so with the overlying strata now lost by erosion. Some of the latest of these Ireson dikes, as one northeast of Salisbury's Cove, are so coarsely crystallized as to prove a heavy over-burden and must be much later in age than any remaining stratified beds that they cut. These dikes all show displacement in the Acadian folding, nevertheless.

At Ireson's Hill, and its cliffs at The Ovens on the north shore, the felsite early lifted a part of the overlying sediments into a dome or lava-

blister and congealed therein as a laccolith, a mile in diameter and two or three hundred feet high. The sedimentary floor is exposed at two points. The roof material appears to have been an ashbed of which bits remain. Fragments of what may have been other such Ireson laccoliths have been found included in the later granite at Otter Cliff and elsewhere.

Subsequent to the Acadian folding, came a great bathylithic invasion, not limited to Mount Desert. This formed a trap or "black granite," which I (1942) have called the *Prettymarsh diorite*. It seems to have occupied most of the ground that the granite later took over, but a good deal more besides. Such devouring of one magmatic mass (here the diorite) by another (here the granite) has been described by excellent investigators in other parts of the world and there seems to be no doubt of it on Mount Desert; but, in adjoining quadrangles, the diorite has been considered a "border phase" of the granite because of its partially marginal distribution. On Mount Desert, at least, the border of the granite is whiter, not dioritic, and the diorite is greatly invaded and inclosed by the granite, with marked chill on the latter.

This diorite takes many forms, perhaps cupolas, surely *chonoliths*, *laccoliths*, and *dikes*, its texture varying with the size of the body but so coarse in the larger masses (2 to 3 millimeter grain) as to prove thick cover, thicker than for the Ireson felsite. The Prettymarsh dikes are mostly massive ones, usually with welted surfaces, but the distinction from the (much later) Triassic dikes is not always easy to make. The diorite *laccoliths* conspicuous in the five Porcupines off Bar Harbor have been overlooked by all previous workers, or misinterpreted. In each of these islands, and also in Ironbound beyond them, the floor of Bar Harbor sediments (with some ash interbeds) is exposed at low tide on the south end or side, but dipping gently north so as to be submerged on the north. On the other hand, remnants of the roof strata are found here and there on these north sides. On Long Porcupine, the feeding dikes mushrooming out into the "blister" are splendidly exhibited, and here the columnar jointing, like that in our Palisades (though the diorite is a much older rock), can be seen even from Bar Harbor, two miles away. Sol's Cliff and Great Head are other known diorite laccoliths, on the main island. In these the floor sediments have been softened and soaked, or much disturbed and convoluted, as seen from the passing boat. Other diorite hills, taken for cupolas, may really be laccoliths.

Latest of the great intrusions is the *Cadillac granite,* mostly coarser than the diorite as if cooled beneath still thicker cover. Normally, it is a pink or rose-red hornblende-granite or quartz-syenite, but marginally and in its dikes and veins it is blanched, grows finer-grained, and may carry some biotite also. On Hadley's Hill, and in the quarry on the north end of Champlain Mountain, the granite has assimilated some of the diorite, but otherwise the contacts and contrasts with that rock are normally sharp, except where the diorite has been strongly and unmistakably *soaked.* The sediments are quite as strikingly soaked by the granite at some points.

The commercial granite at Hall's Quarry on the north end of Somes Sound seems to be in one of these contact or border phases—lighter-colored to "white," fine and even-grained, with biotite( but I have never failed to find hornblende also) and good "rift" and "grain." It seems to indicate that the roof of the bathylith came down as a "pendant" in this valley of the Sound, in which there are other roof-remnants in its most deeply ice-eroded passage, on Sergeant's Drive.

Around the main *bathylith* of Cadillac granite on Mount Desert, there are several other patches of this pink granite, differing in no particular, that have the form of *cupolas,* and are sometimes very steep-sided and high, some being circular but most of them more or less elongated. These are believed to be cupolas, indicating that the granite bathylith flares outward underground to bear these on its concealed skirts. Demonstrably, the main granite mass also goes precipitously down under the "weak rocks" roof, at east and west ends. The suggestion thus arising, that its exposed portion also was originally studded with cupolas and that these determined the location of the present peaks, is strengthened by two other observations. One is that in every intermontane valley that has been explored for them, remnants of roof-pendants have been found low in the side walls, but no trace of the dikes that Shaler (1889) "hypothecated" (his own expression) in these valleys as causal. The other is the much-debated sheet-jointing concentric with the forms of the present granite surfaces, except where these were undercut by the ice-lobes. In a sea cliff on Bartlett's Island, the granite was found in igneous contact beneath the contorted schist and the sheets paralleled the roof; an instance which other theories fail to explain. It is believed, therefore, that the sheeting gives a reliable guide to the original contact surface of the granite, and from this it can be proved that almost none of the granite has been removed by erosion.

The granitic lowland north of the mountains, moreover, which writers have tried to ascribe to peneplanation or to glacial erosion, was found to be so largely a mosaic of diorite in granite that only negligible erosion of the granite could have happened here.

The wonder of the transmontane valleys thus finds answer in normal atmospheric weathering-out of weak roof-pendants, preglacially.

The apophyses and external ramifications of the granite are extensive. Marvelous mosaics occur also along its lateral contacts. Frequently, fragments of the Prettymarsh diorite dikes stripped of their wall rocks are sunk down into its upper surface, deceptive until their abrupt terminations are found. Rarely, some of the wall rock, such as Cranberry Island porphyry, remains attached to these. A case of this occurs on Cadillac Mountain road on the west summit, over 1500 feet above sea.

Strangest of all the effects of the Cadillac magma is the *Seawall metafelsite* or "sugar granite" covering a large (central) portion of the low southwest lobe of the Island. Everywhere about its margins this pink "granite" (frequently as coarse as the Cadillac) grades imperceptibly into the normal blue Cranberry Island felsite porphyry (quartz-melaphyre). Never as dense and firm as the Cadillac, usually with plenty of tiny miarolitic(?) cavities and with a vague or "fuzzy" look to its crystal grain, often varying in color or texture in bands and streaks, it is instantly rejected by the quarrymen, but has fooled many of those who have mapped the rocks of the Island, including myself. That it is a product of pneumatolytic metasomatism of the felsite porphyry by emanations presumably from the Cadillac magma seems, today, indisputable. Dikes of the Cadillac cut it at Stanley's Lobster Pound. Rare minerals occur in it at Seawall Camp Ground and elsewhere.

Last of the igneous rocks are the Newark trap dikes of Triassic age cutting the granite and the older rocks alike, which attract the visitor's eye on the Mountain Road and on Schoodic Point, far east. Still later than these, are veins of clear quartz and green epidote.

Without fossils to guide, the ages of these rocks may seem mere guesswork. There is not time here to present the evidence, but the Bartlett's Island schist bears every mark of being a metamorphic equivalent of the Etcheminian Lower Cambrian of New Brunswick, its folding the *Taconian* orogeny. The Frenchman's Bay strata tie closely to similar rocks not far west and east that carry Clinton and Rochester early

Silurian fossils, with similar felsite flows and ashes. The Ireson felsite may bridge from this age into the Siluronian, followed by the Acadian orogeny. The Prettymarsh diorite has close affinity with the basalt flows interbedded with the Perry Upper Devonian strata at Eastport that contain fossil plants diagnostic of the true (Senecan) Chemung of New York and Pennsylvania (Montrose, equals Wellsburg). The best present guess at the Cadillac granite is Mississippian (approximately Windsor), but that is a long story of mis-correlations and orogenies, involving even a doubt whether the Cadillac bathylith may not be after all a *pseudobathylith*.

The glacial history cries aloud for someone to tackle it while road cuts and borrow pits are fresh, after intensive road-building. The glacial troughs (dorrs) of the lakes and Somes Sound are "U-valleys," but their rims are a long way below. The mountain summits and their bottoms are only where the side slopes of the preglacial V-valleys would seem to meet, except in the over-deepened rock-basins. Glacial erosion need not be invoked for the rounded summits (cupolas), the unsymmetrical Porcupines (originally unsymmetrical laccoliths in dipping strata), the precipices of Champlain and Beehive (steep-walled bathylith with vertical sheet-joints) and many other such cliffs. Rhythmic oscillations of the waning ice rather than separate glaciations will account for any genuine cases of till over clay or sand, and, of these readvances, the Jordan's Pond and Great Pond deltas seem to mark a major one.

Of marine bars and beaches, that build today only on the landward side of the islands, splendid ones exist all unsung northwest of Hull's Cove and on the southeast slope of Ireson's Hill.

Much of the glacial history of Maine and the postglacial land-sea oscillation can best be worked out on Mount Desert Island.

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The following list, arranged chronologically, covers the chief sources utilized in preparing this address.

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1929. **Raisz, Erwin Josephus.** The scenery of Mount Desert Island, its origin and development. Ann. N. Y. Acad. Sci. **31**: 121–186. (Illustrated.)

1939. **Chadwick, George Halcott.** Geology of Mount Desert Island, Maine. Am. Jour. Sci. (5) **37**: 355–363. (Map.)

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## SECTION OF BIOLOGY

### MARCH 13, 1944

DOCTOR ROBERT GAUNT, Washington Square College of Arts and Science, New York University, New York, N. Y.: *Endocrine Factors in Water Diuresis and Water Intoxication.** (This lecture was illustrated with lantern slides.)

It is recognized that the glands of internal secretion are important in the regulation of water metabolism and distribution, but the extent and mechanism of the interrelationships involved have not received exhaustive study. The antidiuretic role of the neurohypophyseal hormone is apparently well understood, but that of the other hormones is more obscure.

Certain aspects of the actions of the adrenal cortex, the thyroid, and the anterior pituitary in the regulation of body water will be considered here.

There are two common means by which the gross aspects of such problems are studied: (1) by measuring the daily voluntary water intake and urine output, i.e., the daily water exchange; (2) by observing the fate of measured doses of water given by stomach tube to fasted animals. When water is thus given in small doses, it will be referred to as a water diuresis experiment; when given in large doses, as a water intoxication experiment. Largely for lack of time, only water diuresis and intoxication experiments will be considered here.

These observations were made at different times and for different specific purposes, and consequently there are some variations in experimental details.

Water intoxication, a syndrome named and described by Rowntree[1] and his collaborators in the 1920's, can be produced by forcing water more rapidly than it can be excreted. Details will follow, but, in general, excess water leads to obvious distress, climaxed by convulsive seizures of remarkable violence. The syndrome is not entirely one of theoretical interest. No normal person, under normal circumstances, would likely consume enough water to induce intoxication. The consumption of lesser amounts of water has been reported to cause symp-

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toms, either mild or severe, when renal function is impaired, when there is shock-like hypotension, when pituitrin is used as in diabetes insipidus, or in any condition in which there is depletion of the NaCl stores of the body. To that list can be added, almost certainly, the state of adrenal and of anterior pituitary insufficiency. Probably, the most common instance is the condition of heat cramps, apparently due to the loss of NaCl by sweating. Thirst is intense, and, if satisfied by water without replacement of the salt, leads to the well-known toxic symptoms, which seem to be those of water intoxication.

Experimental Techniques.—In most of our diuresis experiments water was given in two doses at hour intervals by stomach tube. The doses were calculated either on the basis of body surface or body weight, but in either case approximated 5 per cent of the body weight. The body surface dose for a 200 g. rat was 9 cc.; the body weight dose, 10 cc.—a difference that is immaterial for the purposes of this discussion. Water intoxication was produced in adrenalectomized rats by 5 doses at hour intervals; and, in normal rats, by 13 doses given half-hourly.

## RESPONSE OF ADRENALECTOMIZED RATS TO WATER

Rowntree and Snell[2] first noticed a lack of normal water diuresis, following the administration of water, in Addison's disease. The same phenomenon was noted and studied experimentally by Rigler[3] in mice, by Swingle *et al*[4] in dogs, and in our laboratory in rats.[5] In all cases, it was noted that adrenalectomized animals failed to eliminate administered fluid properly, and that a high susceptibility to water intoxication was present.

We have recently investigated the problem in some detail, with the following results:

Diuresis.—Rats adrenalectomized for only one day—and hence having practically no signs of adrenal insufficiency—show a reduction of more than 30 per cent in the rate at which small (two) doses of water are excreted. When 5 doses are given, the resulting diuresis is over 60 per cent below normal, and definite intoxication symptoms appear.

If a week elapses after adrenalectomy, even though the animals are well-maintained on salt or cortical hormones, the diuretic response to water is lost almost entirely, and intoxication is still more easily induced.

Body Temperature.—In both normal and adrenalectomized animals the progress and extent of a state of water intoxication can be fol-

lowed reliably by the simple device of measuring rectal temperature. Temperature gradually falls 15° to 20° F. before death. In the subsequent experiments, water intoxication was arbitrarily said to be present when body temperature had dropped to approximately 90° F.

CAUSE OF DEFICIENCY IN WATER DIURESIS AFTER ADRENALECTOMY.—Stated in general terms, there seem to be two reasons for the inadequate elimination of water after adrenalectomy: (1) a sluggish emptying of the stomach and delayed intestinal absorption; and (2) an inability to excrete normally water that is absorbed.

In animals receiving only 2 doses of water and operated for only one day, the delayed absorption could account for practically all of the lack of diuresis. When longer intervals elapse after adrenalectomy, or when high doses of water are given, the absorbed water accumulates in the bodies of adrenalectomized animals—presumably due to renal dysfunction.

When fluid (0.45% NaCl) is introduced intraperitoneally, absorption is at a normal rate. Diuresis is almost normal in one-day operated animals, but is decidedly diminished in animals operated for a week.

It would seem, therefore, that when water is given by mouth, the first cause of the deficiency in diuresis is a prompt reduction in intestinal absorption, after which there appears more slowly some deficiency which inhibits excretion. The nature of the failure in the excretory mechanism has not been studied, and may be due in part to extrarenal factors; but that renal deficiencies do occur after adrenalectomy is well-known,[6,7] and an increased water reabsorption has been reported.[7]

CHANGES IN THE CIRCULATION.—Intoxicating doses of water do not induce in either adrenalectomized or normal animals a significant fall in blood pressure, such as follows most other stresses after adrenalectomy. Rises are sometimes seen, but not invariably. Peripheral cutaneous circulation (observed routinely in the interdigital web when taking blood pressure) was well maintained. Pressure was initially lower in adrenalectomized than in normal animals, accounting in part for the lack of diuresis, but not for the terminal collapse.

CHANGES IN BLOOD AND URINE CONSTITUENTS.——Water given in intoxicating doses causes the external loss of much chloride (circa 80 mg. NaCl) in urine and diarrheal fluid of normal rats. In adrenalectomized animals less is excreted because of the retarded diuresis, but the plasma stores are depleted by a large shift of chloride to the unabsorbed fluid of the gut.

In other species, the introduction of water induces a sharp drop in hematocrit levels,[1,8] but, in the rat, rises in hematocrit always were associated with intoxication symptoms. These were more severe in adrenalectomized (+17%) than in normal (+10%) animals. Hemoglobin tended to follow the hematocrit in adrenalectomized rats, but with a lesser percentage rise.

Plasma protein, on the other hand, fell in all cases, but much more in adrenalectomized (−27%) than in normal rats (−13%).

Plasma chloride was reduced in all cases after either diuretic or intoxicating doses. In intoxicated states, it was reduced by −21 per cent in adrenalectomized rats; but −35 per cent in normal rats.

INTERPRETATIONS.—The experimental facts listed above are not in themselves sufficient to be self-explanatory. Tentatively, however, certain inferences can be drawn which must await experimental confirmation.

It is suggested, following others,[1,9] that the primary cause of water intoxication is the loss of extracellular electrolyte (NaCl) and the consequent alterations in water distribution. When the depleted Cl level is restored and tonicity raised by injections of hypertonic NaCl, recovery from symptoms is prompt and dramatic.[1,10] We have found that even the use of 1 cc. of normal saline per hour extends life and prevents the hematocrit rise.

Calculations of chloride balance made from determinations of plasma levels, urine (and diarrheal) loss, and the shift of unabsorbed water of the intestines, indicate that the entire extracellular loss can be accounted for without the assumption of any dilution or expansion of the extracellular fluid volume.

There is no reason to postulate electrolyte shifts to the liver or elsewhere, as seems to be necessary in the dog.[11]

If, then, the extracellular fluid volume does not increase, the large amount of absorbed-unexcreted water must be inside of cells, or in some special unidentified fluid reservoir. This presumably occasions cell swelling, in which the erythrocytes share, and hence somewhat falsely high hematocrit values are obtained. A marked susceptibility to hemolysis was seen and is consistent with the idea of erythrocyte swelling. In other words, when water is absorbed in the later stages of water intoxication, it expands the intracellular but not the extracellular fluid because of the excessive chloride loss from the latter.

Body cells are then subjected to two abnormal circumstances: (1)

they are diluted and swollen; and (2) they are exposed to a hypotonic environmental fluid of very low NaCl content. Of the latter, we are certain; the former is inferred. A likely cause of the violent convulsions and other symptoms is the reaction of cells, particularly of the central nervous system, to these abnormal circumstances.

The rat differs from the dog, which has been more commonly studied, in that the dog loses much less chloride externally and hence the absorbed fluid would be more evenly distributed.

The adrenalectomized rat differs from normal ones in that: (1) chloride is "lost" largely to the gut instead of urine; (2) plasma protein is also lost, presumably by capillary leakage to the interstitial fluid,[12] thus disturbing the normal relations between blood and interstitial fluid; (3) there is some "sensitivity to hydration,"[13] perhaps associated with the protein loss, which causes toxic symptoms at lesser levels of fluid retention and high levels of plasma chloride.

Carbohydrate Metabolism.—Blood sugar does not change significantly as adrenalectomized animals go into water intoxication, nor are the toxic effects ameliorated by supplying extra glucose. In normal animals, there is a rise in blood sugar in terminal stages. This was shown to be due to adrenal medullary activity.

Replacement Therapy in Adrenalectomized Rats.—Rats operated for only one day respond readily to replacement therapy with cortical extract or crystalline adrenal hormones. 17-hydroxy-11-dehydrocorticosterone is, however, much more effective than DCA (desoxycorticosterone acetate).[14] Curiously, however, animals that have been operated for a week, even though maintained on salt, cortical extract or DCA, and given extra doses preparatory to testing, show erratic responses thereto and in many cases no benefit. Such refractoriness does not appear in the dog,[13] but may have its counterpart in the persisting renal deficiencies of well-treated Addisonnians.[6] Sex steroids have no replacement value.[15]

Effects of Cortical Hormones in Intact Animals.—Protection is afforded normal rats against otherwise lethal water intoxication by the use of large doses of cortical extract or DCA.[16]

Tests and Assay Procedures Based on Water Diuresis.—Adrenal functional deficiencies apparently can be easily detected in certain experimental states[17,5] and in Addison's Disease[18] by water diuresis and intoxication tests. Such tests have also served as the basis for assay procedures for cortical hormones.[19,20]

## THE THYROID IN WATER DIURESIS AND WATER INTOXICATION[21]

We have studied various factors which might be expected to change adrenal function, and thus perhaps alter the response to water. One such factor is hyperthyroidism, in which there is marked adrenal hypertrophy and an increased demand for cortical hormone.

In hyperthyroidism, both the diuretic response to water and the resistance to water intoxication was found to be strikingly increased. Some of the probable reasons for this follow:

(1) Others have found marked alterations in renal function in hyperthyroidism which might reasonably be expected to facilitate diuresis.[22,23,24]

(2) The hyperthyroid animal is able to excrete large volumes of water of a low Cl content. This conservation presumably has the same beneficial effect as the administration of NaCl.

(3) It is possible that the increased adrenal cortical activity, associated with hyperthyroidism, may exert an effect like that of the administration of cortical hormones. Other evidence, however, would be somewhat difficult to reconcile with this hypothesis.[25]

In any case, the effects of hyperthyroidism are completely nullified by adrenalectomy. Hyperthyroid-adrenalectomized rats succumb to water intoxication in the same manner as untreated-adrenalectomized ones, with the exception that the loss of body temperature is less.

Curiously, hypothyroidism produces slight, if any, increase in the susceptibility to water intoxication.

## THE ANTERIOR PITUITARY IN WATER DIURESIS AND WATER INTOXICATION

We noticed in 1937 that hypophysectomized rats were as susceptible to water intoxication as adrenalectomized ones, and that this susceptibility could be prevented with cortical extract.[5]

At that time, it did not occur to us that small, non-intoxicating diuretic doses of water would not be easily eliminated, because we were impressed by the fact that hypophysectomized rats normally run a mild diabetes insipidus. However, somewhat later we had occasion to test for sensitivity to the antidiuretic effects of pitressin in hypophysectomized animals and, in doing so by the usual method, observed the rate of excretion of single doses of water (5% of body weight). It was apparent at once that these small doses of water exerted no diuretic effect.

They were, in fact, actually antidiuretic in that, if the animals were fasted and left alone, they would drink less water than we gave but would put out more urine than in our experiments. We thought, at the time, that this was likely due to some shock-like effect of the manipulation, mild though it was, in these fragile animals. Blood pressure determinations did not confirm the idea that shock was induced. Hypotension was present initially, but its severity was not increased by the administration of water.

Further observations were delayed, and, in the meantime, Walker[28] and Chen and Geiling[29] noted the same phenomena. Walker's observations were only incidental to other studies, but he suggested that the results were likely due to delayed absorption. Chen and Geiling showed that the effect was purely an anterior lobe deficiency and occurred either in the presence or absence of the posterior lobe.

In subsequent studies, we have found that there is a delay in intestinal absorption, but one apparently lesser in extent than in adrenalectomized animals. This means that the main difficulty was some excretory dysfunction that prevented elimination of absorbed fluid.

The deficiency, whatever its detailed nature may be, is apparently due primarily to hypofunction of the adrenal cortex. It can, at least, be almost completely repaired by small doses (2 cc.) of adrenalin cortical extract, or 2 mg. of DCA. It cannot be relieved at all by a crude anterior pituitary extract which restores most other functions, but is weak in adrenotrophin; nor by thyroxin in doses that restore basal metabolism to normal; nor by combinations of thyroxin and the pituitary extract.

Since the deficiency is actually worse than in adrenalectomized animals, there is likely some pituitary factor, in addition to that which works through the adrenal, also involved.

## CONCLUSIONS

The hormones of the adrenal cortex, the thyroid and the anterior pituitary, through their effects on water absorption, electrolyte metabolism, permeability, renal function, etc., exert important regulatory influences on the metabolism and distribution of body water. The extent and, to some degree, the nature of such influences can be revealed with ease by subjecting animals, in which the level of these hormones is varied, to diuretic or intoxicating doses of water.

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DOCTOR BECKETT M. HOWORTH, Columbia University, New York, N. Y.: *Biological Aspects of Mountaineering.** (Illustrated by motion pictures, in color, and demonstration of climbing equipment.)

The title of this presentation is redundant in a way, as there are biological aspects to all phases of mountaineering. The persons who climb are, of course, biological, as well as all of their activities, such as sleeping, eating, and climbing. Their food is derived from biological sources, as well as their boots and clothing, and even some of their equipment. There are biological aspects to campsites, while trails abound with them, e.g., flowers, trees and shrubs, birds, insects, and animals. The montains themselves, though essentially geological, have many biological relations, such as the fossils which lie buried in them, the water and snow which they collect, and the soil which they form. Even the weather has a close relation to the flora and fauna of the mountains, as well as to their transient guests. Thus, we find whole biological cycles represented in mountains and mountaineering.

Mountains have been climbed occasionally since the beginning of history, for observation and for game hunting, but mountaineering is relatively recent in scientific interest as well as in sport. High mountains, generally, have been regarded with awe and superstition and even with reverence, by the native peoples in their vicinity, and often are so regarded even today. Nearly all mountaineering history has been crowded into the past hundred years. The first mountaineers were travelers or artists, like Whymper, who first climbed the Matterhorn, scientists like Gesner, in the 16th Century, or de Saussure, among the first to ascend Mont Blanc, the highest mountain in western Europe, or explorers like Fremont, who first climbed one of the Wind River mountains of Wyoming. These pioneers had almost no precedents in approach, route finding, technique or equipment. Their guides were not skillful mountaineers, but hardy and courageous natives familiar with the region, and knowing how to live in the mountains. The courage and ability of these early climbers is all the more remarkable when measured in terms of the knowledge and equipment of today.

Approach to the mountains may be easy, by boat, train, or paved highway, for food and equipment as well as personnel. Mountain hotels or huts, often with keepers who provide beds and meals, are common in Europe. Other mountains are difficult to approach, requir-

* This address was delivered at the meeting of the Section of Biology, February 14, 1944.

ing days or even weeks of heavy backpacking, sometimes with the aid of pack animals, porters, or the aeroplane, as in the Himalaya or Alaska. Many mountains can be climbed in a day from a suitable base camp, while others may require the laying out of a series of high camps, with tents, sleeping bags, clothing, food, and fuel, in the manner of Arctic exploration. Often the problems of the establishment and maintenance of the camps are greater than those of the actual climb, and the organization and quality of the camps will determine the success or failure of the expedition. Many adjustments must be made for altitude and temperature, due, for example, to changes in the palatability, or boiling point of food. Reduced oxygen may result in loss of appetite or change in taste, greater susceptibility to cold, sleeplessness, greatly diminished capacity for work. Camp equipment must be chosen with great care, portability, durability, ease of operation and light weight being prime considerations.

Selection of a route up the mountain may be of great importance. Some mountains may be climbed from any angle without difficulty or danger. Other mountains, such as Kanchenjunga, may have no safe route, none sure to "go." The margin of safety becomes less with increasing altitude, and the difficulty of climbing greater. Ridges are apt to be safer than faces, whereas gullies or "couloirs" are often subject to falling rocks, ice or snow. Ridges are more exposed in wind or storm. A glacier, with its numerous crevasses and ice falls, may offer a dangerous or difficult approach, yet be the only feasible one. Routes and high campsites must be selected so as to avoid avalanche paths. Maps, reports, observation with field glasses and from neighboring peaks or by air, and trial of prospective routes, all will aid in the choice of the better one. The simplest and safest route is usually chosen for an unclimbed or very difficult peak. A more "interesting" or difficult or new route may be preferred on the mountain which has been frequently climbed. Snow and ice conditions, weather, size and strength of party, time, and importance of the climb, are factors in the final choice of the route.

The basis of climbing is to get up the mountain, and not only the route, but the climbing technique are adjusted to this end. Climbing consists essentially of walking, the legs nearly always doing the major part of the work. The hands and arms are used chiefly for balance and for assisting the legs when necessary, but occasionally may do the major work for a short distance. No one can climb a smooth vertical wall.

There must be "holds" of some sort, cracks, ledges, flakes, knobs, or even large crystals of rock serving the purpose. The holds do not have to be large, as they are generally used only for a moment in passing. The climber usually uses fingers and toes, and keeps the body away from the rock. The beginner tends to choose level platforms large enough to sit or stand upon with both feet, and to remain there, whereas the experienced climber requires only something large enough for the corner of a boot or sneaker, a finger or two, and uses it only for a fleeting support. Climbing signifies motion, not parking, and the good climber moves almost continuously, with rhythm, smoothness, balance and momentum. He climbs with movements like a cat or a modern dancer. Occasionally, in a wide crack or chimney, the ankle, elbow, or knee may be used with a sideways pressure or twist to secure enough friction for a hold, or the hands may pull in opposite directions against the sides of the crack, or the back and one foot may press against one wall, while the hands and other foot press against the opposite wall. It is easy to produce enough friction to support the climber, but more difficult to keep moving upward. Crack and chimney climbing are usually more difficult, technically or physically, than climbing faces or ridges. Snow slopes may be soft, making it difficult to find firm footing, or loose, with danger of avalanching. Other snow slopes may require the kicking or cutting of steps, often a long and laborious process, but snow climbing is usually not difficult. However, deep snow along the crest of a broken, narrow ridge may be a serious problem. Ice is often quite difficult, as it is smooth, cold and slippery, may break loose, and has few natural holds. Step cutting in ice is also difficult and very tiring, especially in awkward situations.

The steepness, height and airiness of a route are usually spoken of as "exposure." For example, an overhanging rock wall with two thousand feet of space vertically below would be called "exposed," even if the climbing were not difficult. Exposure is often the most difficult part of climbing. Many people feel uneasy on going to the edge of a cliff or high balcony, and looking over. Exposure in climbing is less noticeable, however. Starting from the bottom, one gets used to the height gradually. There is more for the eyes and hands to rest upon, so that balance is easier and more secure. The rock has a solid feeling, a part of the earth, and there is more of it above. Mountain topography also has a solid, earthly appearance, and gives the eye and the balance many opportunities for perspective, as well as the distractions

of beautiful scenery. The act of climbing, and the team work required, especially in the difficult parts, or "pitches," leave little opportunity for fear. Lack of fear is essentially a feeling of security, born of a knowledge of the solidity of the rock and one's own capacity. Experienced climbers, at the beginning of the season, start gradually, until they have recovered their sense of balance and co-ordination, and their "feel" of the rocks.

Rock varies considerably in texture and solidity. Granite, gneiss, and schist are hard and strong and usually dependable. The rock may fracture, largely by the action of ice, and erosion occurs. But fracture and erosion often result in hand- and footholds on otherwise unclimbable rock. Sedimentary rock is often crumbly and unsound. Horizontal stratification usually results in ledges which offer good holds, whereas vertical stratification, splitting or faulting result in cracks and chimneys which may be climbed. The climber must judge the soundness of the rock in general in choosing his route, and of each hold before his weight is put upon it, by inspection, by pulling, pushing, or even pounding upon it. It is particularly important that footholds be inspected at eye level, as they carry most of the weight and are more difficult to judge after the eye and hand have passed them. The climber must consider not only his own security, but also the safety of those who are or might be below him, should he dislodge a stone. Sometimes, the climber is subjected to the unnecessary danger of stones dislodged or thrown by people above. The mountain tourist or walker, when tempted to send down stones, should remember the possibility that there may be a climber beneath him, and that a little stone may start others downward and that even a little stone falling some distance may kill.

Certain equipment aids the mountaineer. His boots are most important. They should be broad-toed and thick-soled, strong and comfortable, large enough for two pairs of heavy socks, but not loose. Hobnails provide a better grip, especially on ice, snow, and wet surfaces. Edge nails are useful around the edges of the soles and heels. Tricouni nails are harder and may grip better on slippery grass or hard snow. Crampons with long spikes may be attached to the boots for a still better grip on hard snow and ice, but may be dangerous if used carelessly or clumsily.

Clothing should, for the most part, be woolen, in several layers,

with an outer garment, such as a parka of wind- and shower-proof poplin or some similar closely woven material.

A rope is used as a safety device when its use would reduce the danger to one of the party. The rope is usually a long-strand, selected manila or hemp, about 130 feet long and one-half inch thick, capable of supporting a ton of dead weight. It is tied to the waist of the leader by a knot such as a bowline, which will not slip. The leader is not prevented by the rope from falling, but will not fall so far. He should climb as carefully as though he did not have the rope. When he reaches a secure stand, he braces himself in a special way, or ties himself to a tree or rock, takes up slack, and "brings up" or "belays" the next man, who has the middle or end of the rope around his waist. The leader has passed the rope over his shoulder or hip, and takes up slack as the next man ascends, so that if the climber came off he would not fall, but be held by the rope. Climbing can thus be made completely safe for all but the leader with proper rope technique. Should the leader reach a point where his margin of safety is too small, he may drive into a crack in the rock at piton, a malleable iron spike shaped like the letter "P." He snaps a carabiner, a ring with a hinged side, through the ring of the piton, slips the rope through the carabiner, and thus reduces the rope length between himself and his nearest support in case of a fall. The piton may also be used for "tying in" at belay points. The rope and its accessories may be used in other ways, but there is not space to discuss them all here. Roped climbing requires a careful and precise technique, considerable experience, and meticulous teamwork, but, when practised in this way, can add greatly to the morale, safety, and climbing capacity of the party.

The ice ax is of great value in snow and ice climbing. It has a pick and an adze blade on the head, and a point on the end of the handle. It may be used for balance and support, like a cane; it may be plunged into the snow as a support for the climber or for the rope, similar to the use of piton and carabiner; it may be used for cutting steps in snow or ice; and it may be used as a brake in sliding down a snow slope on the feet ("glissading," similar to skiing without skis). There are special ice pitons for use in ice climbing. Skis may be used in snow-climbing, and add greatly to the speed and pleasure of the descent, as well as to the interest of the ascent.

The dangers of climbing are not great, and can largely be avoided by a proper choice of route and by care in not knocking off stones.

Avalanches can usually be avoided by proper route selection, and by knowledge and experience. Storms and exposure to wind, cold, and weather, constitute the greatest danger in high mountains. They cannot be avoided or predicted, but, with proper clothing, equipment, camps, and conditioning, their dangers can be minimized. Mountaineering is about as safe as riding in automobiles, and usually need not have the hazards of the unpredictable other party.

Mountaineers are invariably asked, "Why do you climb?" The simple and truthful answer, "Because I like it," is the usual one. The answer of the great English climber, Mallory, who was lost on Everest, is perhaps most expressive to the mountaineer—"Because they are there." Don Blanding, in his poem "To Don May—who climbed mountains with me," has expressed it most completely. The reasons for climbing vary with different people, different circumstances, and at different times. The scientist is interested in the observation of geology, of glaciers, of weather, flora and fauna. The nature-lover is attracted by all these things for their beauty, as well as their construction and activity. The mountain landscape, and mountain storms, sunrises, and clouds, offer some of the Earth's finest scenery, to the delight of viewer and photographer alike. The mountains have furnished inspiration for fine literary passages, both poetry and prose, and spiritual satisfaction since Biblical times, to many people. There is physical joy and mental stimulation in climbing, especially when it is interesting and difficult. It offers physical and mental change and relaxation at its best. The adult is peculiarly fitted to the slower, steadier pace of mountaineering, as compared with more violent sports. The associated camplife, fishing, riding and packing have their joys. Best of all are the companionship, mutual effort, and quiet understanding of those who climb together, revealing, in the vastness and magnificence of some of nature's greatest creations, much of the fineness and glory of man.

## SECTION OF ANTHROPOLOGY

### MARCH 27, 1944

DOCTOR JOSEPH BRAM, Queens College, Flushing, N. Y.: *The Social Identity of the Jews.*

Countless attempts to place the Jews in clear sociological categories have still left them an undefined social phenomenon. Louis Wirth has said that "the elementary question as to whether the Jews are a race, a nationality or a cultural group remains unsettled." Other writers who have tried to find a proper definition for them have expressed the difficulties they encountered in very characteristic terms. They refer to the Jews as "an unusual type of nationality," "a social anomaly," "a peculiar people." Talcott Parsons considers them "a unique social phenomenon," Carl Mayer calls them "a chimeric people" leading "a life of unreality" . . .

One must not think, I believe, that only professional sociologists and anthropologists are aware of the existence of social groups designated by different terms. Taxonomic concepts used popularly with reference to social and ethnic groups may be less refined and less consistent than those coined by social scientists. They are likely, however, to carry more weight in the sphere of political and social action. In so far as men act upon their beliefs, the concepts and convictions of unscholarly men, unfounded as they may be in the eyes of trained social scientists, are of great influence in determining social attitudes and social behavior.

This is why, I believe, it would be of value to survey the typical ways in which the Jews have identified themselves as a social phenomenon, as well as the popular interpretations of them made by the surrounding world. I submit that this survey would show that the social identity of the Jews, both as understood by themselves and as seen by others, becomes a factor of importance in determining the relationships between the Jews and the peoples among whom they live.

I will first deal with the diverse self-identifications current among the Jews.

For a *pious orthodox Jew* the nature of the Jewish people has been defined once and forever by the Old Testament. Chosen by God as the instrument of his will, Israel has a mission to perform. The destiny of the Jews is determined by the Covenant between them and the

Almighty. Those who profess this view interpret the sufferings that the Jews endure and the persecutions visited upon them as the expression of God's wrath.

A *religious traditionalist,* who does not have strong mystico-historical leanings, also accepts religion as the principal feature of Jewishness. He is, however, more likely to emphasize the rituals and the ethical values of Judaism rather than the exclusive supernatural rôle conferred by God upon the Jewish people. Many representatives of this viewpoint think of the Jews as a strictly denominational group similar to the Presbyterians, the Greek Orthodox or the Mohammedans, and repudiate all interest in the non-religious activities of the Jews as a people (e.g., the creation of Jewish Palestine).

For a *cultural autonomist* the Jews are not only a religious group but also the carriers of a broad cultural heritage which embraces their languages (Hebrew and Yiddish), literature, folklore, music and other elements which they consider worthy of preservation and perpetuation. Cultural autonomists oppose the levelling effect that cultural monism has in any particular nation. They believe that genuine democracy should provide for cultural diversity.

A *Zionist* is not necessarily a religious Jew, although many undoubtedly are. A Zionist views the Jews as a nation without a homeland, a people in exile. From his viewpoint, religion has served the function of an enclosure which has prevented the Jews from losing their national identity. With the declining influence of religion, however, the Jews can survive as a nation only if they regain their ancestral land —Palestine. The Zionists consider gradual cultural assimilation with the non-Jewish world a very painful, undesirable and all too frequently unsuccessful process.

The so-called *assimilationists* consider Jewish traditions and the Jewish cultural heritage valuable and respectable in terms of historical perspective, but of relatively limited scope when compared to the achievements of modern Western civilization. They believe that the Jewish tendency to cling to the past only postpones the inevitable, and to them desirable, disappearance of the Jews—their dissolution in the surrounding world. They condemn any planned and organized perpetuation of Jewish culture and frequently of Jewish religion as well. In so far as being Jewish is associated with social discrimination and persecution, Jewishness becomes for some assimilationists more than just a cultural anachronism, and assumes all the characteristics of a

social disease, i.e., something to be minimized or even concealed altogether.

It would be a mistake to ignore the existence of *Jewish racialists*, who believe that the Jewish people, due to millenia of endogamy, represents an unusually pure racial strain with inheritable physical and psychological characteristics. Jewish racialists may hold varying views with regard to Zionism, the Jewish religion or problems of cultural autonomy, but they firmly believe in the reality of the inherited national Jewish character which manifests itself in whatever field of endeavor individual Jews choose to apply their talents. Jewish racialists believe that Spinoza, Marx, Disraeli, Freud and Einstein are specific Jewish geniuses and that the voice of the "racial spirit" is audible in their work. They also believe that the Jewish personality type maintains itself through the ages regardless of diverse environmental influences.

These six views outlined here in reality overlap and combine with each other to varying degrees. They are not always expressed in articulate and consistent terms, and, on the whole, it can be said that great disorientation prevails among the Jews as to their own social identity.

If we turn, now, to the Gentile world, we find there the same lack of agreement regarding the social nature of the Jewish people.

The traditional *Churches of Christianity* view the Jews in the light of the Christian conception of history. They recognize them as a people chosen by God and castigated by him for its failure to accept Christ. From an orthodox Christian viewpoint, the Jews are a "metaphysical" people, the living proof of the authenticity of the Scriptures.

The *less literal-minded Christians* emphasize the religious distinctness of the Jews as the only non-Christian group admitted to participate intimately in the life of the Christian society but do not stress their unique rôle in the cosmic historical drama.

Where the Jews were classified primarily as a religious community, they were treated by the surrounding society in accordance with the degree of religious tolerance prevalent in that society. Thus, they were persecuted in old Russia as a religious minority. Individual Jews, however, could always escape discrimination and persecution by becoming converted to the religion of the majority, since only religion was accepted as a criterion of their Jewishness.

The French, too, defined the Jews as a religious group but treated

them in keeping with the official ideology of the Third Republic, which considered religion a matter of individual choice.

The tendency to consider the *Jews as a race* or a sub-race rather than a religious or cultural minority has been gathering strength since the end of the last century. This tendency is correlated with the specific observable characteristics of the Jews as a minority group which are in contrast with those of the majority of the particular nation in which they live. In this context, "race" is not to be understood in terms of predominant measurable physical characteristics typical of the whole group, but as a visual image shared by the members of a particular society which enables them to identify certain individuals as belonging to what is believed to be a separate racial stock.

This identification is based only partially on physical characters which may be more frequent among the Jews than among the non-Jews in a particular nation. To a far greater extent, the apparent physical identifiability of the Jews is based on cultural characteristics such as gestures, facial expression, speech mannerisms, food habits, clothes, occupations, religious practices and other non-inheritable non-biological features associated with them.

Once the members of the non-Jewish majority have accepted this complex of Jewish earmarks as indicating racial distinctness of the Jews, the usual anthropological argument which denies objective reality to the concept of a Jewish race meets with scepticism. Too many individuals believe that they can identify the Jews on the basis of what they consider to be inherited physical characteristics. . . .

Physical anthropologists should understand that they are not dealing simply with people misinformed on the question of Jewish racial uniformity, but are confronted by popular racial ideologies, which operate with their own implicit definitions of race, their own criteria of classification and their own beliefs regarding the inheritance of learned behavior—a complex of convictions impermeable to isolated data. Before attempting to substitute their objective truth for the generally accepted and functioning "truth" in race-minded nations, anthropologists should analyze more closely the nature of popular fallacies and misconceptions and the reasons why they persist.

We have, thus far, dealt with two interpretations of the Jews by the outside world—the religious and the racial.

There are non-Jews, however, who are more sensitive to the cultural duality of the Jews than to their religious and seeming racial dis-

tinctness. The continued use of Yiddish and Hebrew by many Jews, along with various customs and folkways, is sometimes viewed by the non-Jews as a proof of the Jewish inability or unwillingness to assimilate. Others, who accept the ideals of cultural pluralism, welcome the specific manifestations of Jewish culture as contributing to the broadening and enrichment of the total culture of the larger society.

There are non-Jews who believe that the Jews form a real political national minority with interests not limited to the country of their residence. The creation of Jewish Palestine and the existence of international Jewish organizations of relief are pointed to as indications of dual political allegiance.

The various Jewish self-identifications and the ways in which the Jews are identified by the peoples among whom they live influence each other. Thus, in a race-minded society, the Jews become more keenly aware of their racial distinctness, while, in a society that emphasizes religious criteria for group delimitation, they are likely to consider themselves as primarily a religious community. On the other hand, a Jewish community that actively cultivates its own values (through education, the press, etc.) may lead the surrounding society to consider its status, not in terms of the traditional frame of reference of religion and race, but in terms of a conflict between the ideals of cultural pluralism and those of cultural monism.

Why has it been so difficult to establish the social identity of the Jews in universally acceptable terms? Several tentative explanations can be offered. In the first place, most discussions of the Jewish identity assume, by implication, that the Jews are a relatively static people. Their past is used as a point of reference for the interpretation of their present. Since, in the past, the Jews were a uniformly religious group, religion becomes the principal criterion of Jewishness, the process of Jewish secularization is ignored and the Jews are defined as "ein Volk der Religion."

Another reason for disagreement regarding the social identity of the Jews is the common tendency to judge the whole by its parts. The Jewish people is too often defined on the basis of local and regional sampling. The characteristics of any one sub-group are ascribed to the entire people and its essential ethnic and cultural heterogeneity is overlooked. One easily forgets the black Jews of Ethiopia, the brown Jews of Cochin in India, the old Jewish communities of China, the orientalized Jews of Saudi-Arabia, Yemen, Iraq, Iran, Afghanistan, the Jewish

mountaineers of the Caucasus, and many other non-Western Jewish groups.

Also, in defining the Jews in the Western world, too many writers have remained oblivious to the differential participation of individual Jews in the complex of Jewish characteristics. The knowledge of Hebrew and of Yiddish, the participation in the Jewish religious practices, the familiarity of the Jewish past and the interest in the Jewish communal life are distributed very unevenly among individual Jews. A field-worker could easily find Jewish groups leading a fully Jewish existence, eating Jewish food, singing Jewish songs, and reading Jewish books. Jewishness in such circles is accepted as a familiar, natural and desirable way of life.

At the other end of the scale, the same field-worker would find just as many people for whom Jewishness is associated with vague family reminiscences and less vague frustrations and anxieties caused by social discrimination, but devoid of any linguistic, cultural and religious content.

The two extreme groups, those who want to be Jewish and those who cannot escape being Jewish, have, for a common denominator, only common ancestry and the recurrent hostility of the surrounding world.

This discussion of the social identity of the Jews has been inspired by the desire to plead the case of a realistic functionalist approach to the problems of social and ethnic identity. Instead of trying to define the Jews in terms of preconceived taxonomic criteria only, I have attempted also to explore the many ways in which the Jewish groups identify themselves and are viewed by others. I have also tried to show that there is an interacting relationship between these two sets of popular concepts.

The picture of the Jewish people that emerges out of this discussion is one of extreme heterogeneity. It is also a picture of a changing people interacting with diverse national societies and whose social identity is constantly subjected by both sides to fluctuating interpretations.

## NEW MEMBERS

### ELECTED MARCH 23, 1944

### ACTIVE MEMBERS

Davis, Herbert L., Ph.D., Chemistry, Technical Director, Ethicon Suture Laboratories, Johnson and Johnson, New Brunswick, N. J.

Dyk, Walter, Ph.D., Anthropology, Instructor in Anthropology, Brooklyn College, Brooklyn, N. Y.

Hellerman, Leslie, Ph.D., Physiological Chemistry, Member of the Staff, Physiological Chemistry, Johns Hopkins School of Medicine, Baltimore, Md.

Johnson, Frank H., Ph.D., Biological Rate Control and Action of Inhibitors, Assistant Professor of Biology, Princeton University, Princeton, N. J.

Kramer, Benjamin, M.D., Medicine, Biochemistry, Professor of Clinical Pediatrics, Long Island School of Medicine, Brooklyn, N. Y.

Kris, Ernst, Ph.D., Psychoanalysis, Social Psychology, Visiting Professor, Graduate Faculty, New School of Social Research, New York, N. Y.

Lancefield, Donald E., Ph.D., Biology (Genetics), Associate Professor, Biology, Queens College, Flushing, L. I., N. Y.

Monachino, Joseph, B.S., Botany, Research Botanist, Merck & Company, Inc., New York Botanical Gardens, New York, N. Y.

Scotland, Minnie B., Ph.D., Entomology, Assistant Professor of Biology, New York State College for Teachers, Albany, N. Y.

Wagreich, Harry, Ph.D., Biological Chemistry, Instructor in Chemistry, College of the City of New York, New York, N. Y.

### ASSOCIATE MEMBERS

Bergeim, Frank H., Ph.D., Organic Chemistry, Research Associate, Division of Medicinal Chemistry, Squibb Institute for Medical Research, New Brunswick, N. J.

LaRusso, Violet, B.S., Chemistry, Assistant in Research, Mellon Institute, Pittsburgh, Pa.

Turkevich, Anthony, Ph.D., Physical Chemistry, Group Leader, Metallurgical Laboratories, University of Chicago, Chicago, Ill.

### STUDENT MEMBER

Bassell, Jack Salomon, B.A., Educational Psychology, Graduate Student, Teachers College, Columbia University, New York, N. Y.